

PATENT SPECIFICATION



Convention Date (United States) : March 6, 1926.

267,073

Application Date (In United Kingdom) : May 26, 1926. No. 13,268 / 26.

Complete Accepted : May 19, 1927.

COMPLETE SPECIFICATION.

Improved Means for Lifting and Handling Well Casings, Well Drilling Tools and the like.

We, DUNN MANUFACTURING COMPANY, a corporation of the State of California, of Oxnard, County of Ventura, State of California, United States of America
5 (Assignees of NELSON KAVANAUGH SMITH, a citizen of the United States of America, of 243, North Irving Boulevard, Los Angeles, California, United States of America), do hereby declare the nature
10 of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to well apparatus, and more particularly to elevators
15 for lifting and handling pump tubing, sucker rods, well tubing and well casing and drill pipe and the like, particularly those utilised in the drilling and pump-
20 ing and operation of oil and other wells; and it has for its object to provide improved well apparatus of the character stated, which will be relatively superior
25 in point of simplicity and inexpensiveness of constructing, taken in conjunction with positiveness and reliability in action, convenience in use and manipulation, durability, compactness of form, and length of life.

30 With the above and other objects in view, the invention consists in a device of the character described comprising a body member having relatively movable jaws which are adapted to be raised from one
35 plane from work-holding position to a higher plane in work receiving position.

In the drawings in which are illustrated two particular or specific forms or embodiments of well apparatus or elevators
40 particularly constructed and adapted for use in the handling and lifting or supporting of sucker rods.

Figure 1 is a top plan view, partly broken away, of a sucker rod elevator

[Price 1/-]

embodying the invention, the parts being
45 shown in positions assumed prior to application of the elevator to the sucker rod or other work and being releasably locked in such positions;

Figure 2 is a view similar to Figure 1
50 showing the parts in positions assumed after the application of the elevator to the work, and being positively locked in said positions;

Figure 3 is a view similar to Figure 2
55 of a modified form of elevator construction;

Figure 4 is a view similar to Figure 1
60 of the same modified form of construction;

Figure 5 is a detail longitudinal sectional view taken upon the line 5—5, Fig. 1, and looking in the direction of the appended arrows;

Figure 6 is a similar view taken upon
65 the line 6—6, Fig. 2;

Figure 7 is a detail isometric view of one of the locking jaws utilized in both specific forms of the elevator disclosed in the drawings;

Figure 8 is a side elevation of the elevator construction shown in Fig. 1, showing a bail supplied to the same and disclosing means for limiting the relative
70 swing of the bail and elevator body;

Figure 9 is a detail longitudinal sectional view, taken upon the line 9—9, Fig. 3, and looking in the direction of the appended arrows; the jaws being in position of Fig. 4.

Figure 10 is a view similar to Figure 5, but taken in line 10—10 of Fig. 2 showing the parts assumed by the elevator when applied to the work, Fig. 5 showing the parts in the position assumed
80 prior to application to the work as in Fig. 1; and,

Figure 11 is a detail transverse

sectional view taken upon the line 11—11, Fig. 3, and looking in the direction of the appended arrows.

Corresponding parts in the figures are designated by the same reference characters.

Referring with particularity to the drawings, we have shown therein in all the figures excepting 3, 4, 9 and 11, a general stirrup or U-shaped elevator body A, and in the other mentioned figures a slightly altered similarly formed elevator body B, in connection with each of which forms of body cooperate work-engaging and locking jaws C which are accommodated and mounted in association with said body in positions to be presented to and engaged with and operatively locked to work, such as a sucker rod *a* indicated in Figure 10, the body A or B receiving and accommodating such sucker rod or other work in such presentation of the jaws thereto, through a space provided at the forward portion of the body, and indicated at *b* in the figures other than Figures 3, 4, 9 and 11, and indicated in said latter figures at *c*. With such jaws C cooperates latch means D in the elevator shown in Figure 1 and the accompanying figures, and latch means E in the other form, the latch means D being mounted for rectilinear or sliding movement and the latch means E comprising two pivotally mounted spaced members *e* mounted at opposite sides of the space *c*. Each of the elevator bodies A and B is provided with the usual lateral trunnions F to which may be applied a bail or bails or links or other suitable supporting means for an elevator and its work. Two of the work-engaging and locking jaws C are employed in each of the specific types of elevators shown, and same are mounted so as to both play pivotally in horizontal paths and likewise to play vertically during such pivotal play, such jaws being in depressed position when positively locked in work-engaging positions and conditions, and being in elevated positions when not applied to the work and releasably locked. These jaws C consist each of a body 12 which lies in a horizontal plane, or in either of two horizontal planes responsive to rise and fall, as stated, and each such body is constrained to swing about an axis, consisting, in the main form of Fig. 1, of a bolt or pivot pin 13 or 16 passing through the body and serving also as one of four bolts 13, 14, 15 and 16 which serve to hold in place a top plate 17 confining the working parts of the device. An extra bolt or pin 13^a is provided for each of the bodies 12 in the modified form of construction of Figure 3, and four

securing bolts 13^b, 14, 15 and 16 are used for holding the top plate 17 in place, these top plates 17 varying somewhat in form in agreement with the difference in form or shape of the two devices as entireties, but serving the same functions.

The jaws C are mounted in opposition to each other and provided with arcuate portions 12^a which are adapted to receive and accommodate the work, such as the sucker rods *a*, when in operative positions and relations, as shown in Figs. 3 and 2, and which are adapted to be presented to the work when in inoperative positions as in Figs. 1 and 4, and are adapted when in the latter positions to lie in part athwart a work-receiving vertical bore or opening 18 which directly communicates with the space *b* or *c*, such space and opening being confined at one end and the sides of the entirety by the body A or B and by forwardly projecting arms 19 on said body. At opposite sides of the arcuate surfaces 12^a are heads or shoulders 12^b and 12^c, the former of which come substantially into engagement when the jaws are in inoperative positions, and the latter of which come substantially in engagement when the jaws are in operative positions. Rearwardly projecting fingers 12^d are provided, cooperating with the locking means D, which may include a sliding stirrup-shaped member 20 confined between side walls 21 rising from the body A and extending longitudinally of the body so as likewise to confine the jaws C, the arms 19 in the main form of construction likewise rising to the top surface plane of said side walls, but, however, in the modified form of construction they merely project from the lower portion of the body as at 19, as protection for the latch means. The member 20 is provided with lateral stop heads 22 cooperating with the end walls of slots 23 in the side walls 21, to limit the play of such member 20, and such member is provided with depending heads 24 disposed forwardly of coil compression springs 25 confined between such heads and rear wall members 26 upon the body. These heads 24 are disposed slightly rearwardly of the forward ends of the member 20 and at the inner sides of such member forwardly of the heads are disposed forwardly projecting cheeks 27, and the fingers 12^d lie outwardly of said cheeks and forwardly of the heads 24 when the jaws C are in operative positions, and lie athwart the forward ends of said cheeks when the jaws are in inoperative positions, as respectively shown in Figures 2 and 1 of the drawings, the jaws thus being maintained positively locked when in operative posi-

tions, by the disposition of said fingers 12^d between said cheeks and the side walls 21 and being maintained releasably locked when in inoperative positions.

5 The jaws in depressed positions lie in pockets 28 between forward cam surfaces 29 and rearward cam surfaces 30 upon the body A, and ride upwardly upon said cam surfaces when going into inoperative positions, and downwardly into the pockets 28 when going into operative positions. The jaws cannot rise into inoperative positions unless they can turn upon their axes 13, and this turning is prevented by the interlocking of the fingers 12^d with the member 20. Thus the jaws are positively locked when in depressed operative positions. When the work is brought into engagement with the innermost portions of the arcuate faces 12^a, however, the stresses brought to bear upon the jaws cause them to tend to rotate about their axes, causing the fingers 12^d to bear upon the curved or biased ends of the cheeks 27, and the springs 25 are compressed, forcing the member 20 rearwardly and permitting the jaws to turn and fall into operative positively locked positions, from which they may be released so that they may ascend and turn into inoperative positions, by retracting the member 20. The top plate 17 has a cut-out portion 17ⁱ conforming generally to the conformation of the space *b*, or the corresponding space *c* in the modified form of construction, although being somewhat enlarged centrally, preferably, and the work, such as the swell or bell *aa*, may readily descend and rest upon the jaws. A bail or bails or links H is or are applied to the trunnions F for supporting the entirety, and these may be limited in their swing fore and aft, so as to be kept substantially at or above horizontal position, by stops K upon the body A at the sides thereof, and forwardly and rearwardly of the trunnions F. Various clearances and drainage openings may be provided in the device, for freeing the working parts from fluids or mobile substances encountered in well work and tending to jamb or impede or interfere with the operation of the device.

In the modified form of construction, the jaws C are positively locked when in operative positions by the pivoted spaced members *e*, which overlie the arms 19 and have outwardly and oppositely laterally curved finger-pieces 31. These pivoted members are confined between the lateral walls 21 and the jaws and have inwardly directed noses 32 at their inner ends which enter recesses 33 in the jaws C when the jaws are in operative positions, and which ride on to flat faces 34

upon the jaws when the jaws are in inoperative positions. In the former positions these noses 32 together with the forward and rearward cams 29 and 30, lock the jaws positively in operative positions and when these noses 32 are upon the flat faces 34 the jaws are releasably locked in inoperative positions. The noses 32 are urged into jaw-engaging positions by coil compression springs 35 housed within chambers 36 within the trunnions F. When the jaws are in operative positions, the fingers 12^d engage with shoulders 37 formed upon the side walls 21 of the body, further limiting movement of the jaws. The noses 32 ride into the recesses 33 when the work and the arcuate faces 12^a of the jaws co-act in applying the elevator to the work. In order to release the jaws to permit the elevator to be withdrawn from the work, it is merely necessary to grasp the finger-pieces 31 and cause them to approach each other against the compression of the springs 35 whereupon the elevator may be withdrawn from the work and the noses brought to bear upon the flat faces 34 in positions from which they may automatically ride into the recess 32, when the elevator is again applied to the work.

The operation, method of use and advantages of the improved elevator construction, of either form, will be readily understood from the foregoing description and statement, taken in connection with the accompanying drawings; and furthermore, it is obvious that various modifications, changes, substitutions and alterations may be made, in practicing the invention, in departure from the specific features so disclosed, without departing from the scope of the invention set out in the appended claims.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A device of the character described comprising a body member having relatively movable jaws which are adapted to be raised from one plane from work-holding position to a higher plane in work-receiving position.

2. A device as claimed in Claim 1 wherein the jaws are provided with curved surfaces which are presented to the work to cause them to move into work-engaging and locked relations.

3. A device as claimed in Claim 2 wherein the jaws are locked by means comprising a spring-actuated sliding member provided with projecting portions

and each of said jaws is provided with a finger adapted to co-act with said projecting portions in different positions incident to different locking positions.

5 4. A device as claimed in any of the preceding claims wherein the body member is provided with pockets to accommodate the jaw members.

10 5. A device as claimed in Claim 1 wherein cam means are provided for causing the movement of the jaw members from one plane to another plane when said jaw members are partially rotated.

6. A device as claimed in any of the preceding claims wherein means are provided for suspending the body and stop means on said body limiting the movement thereof in either direction. 15

7. A device for handling well casings, drilling tools and the like, substantially 20 as described or as illustrated in the accompanying drawings.

Dated this 25th day of May, 1926.

MARKS & CLERK.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1927.

Fig. 3.

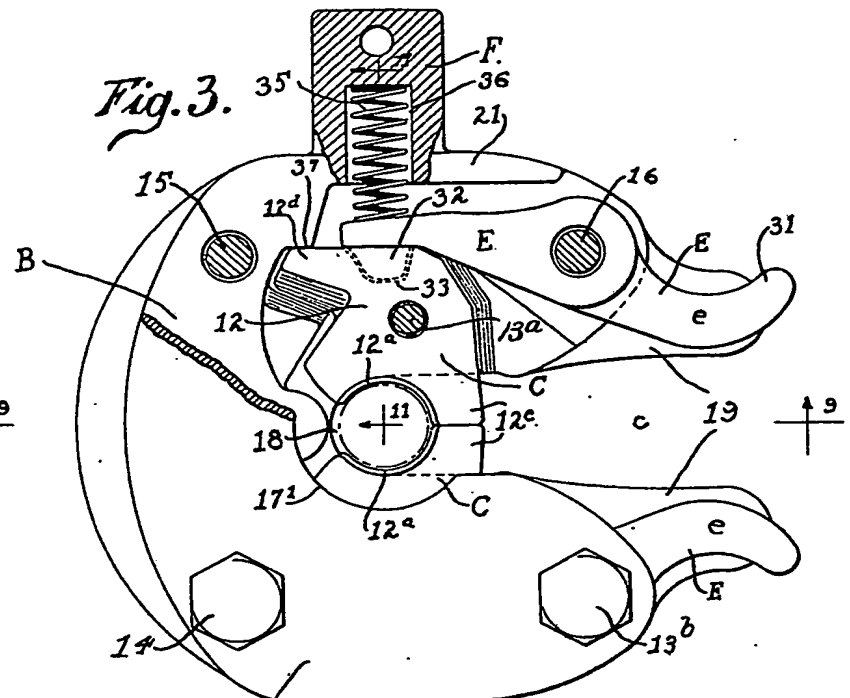
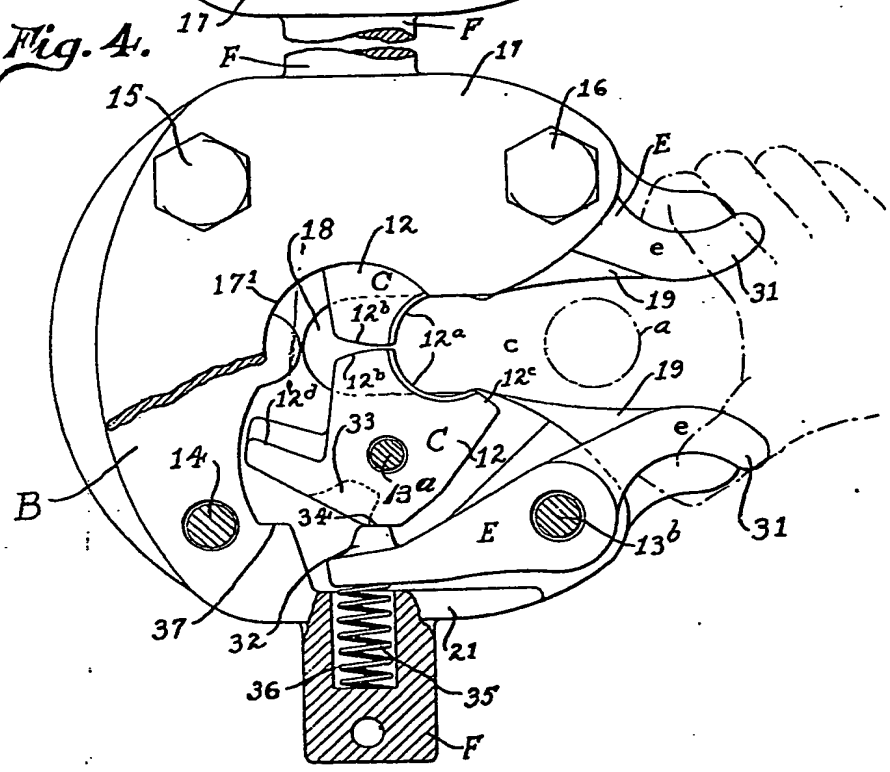


Fig. 4.



267,073 COMPLETE SPECIFICATION

SHEET 1

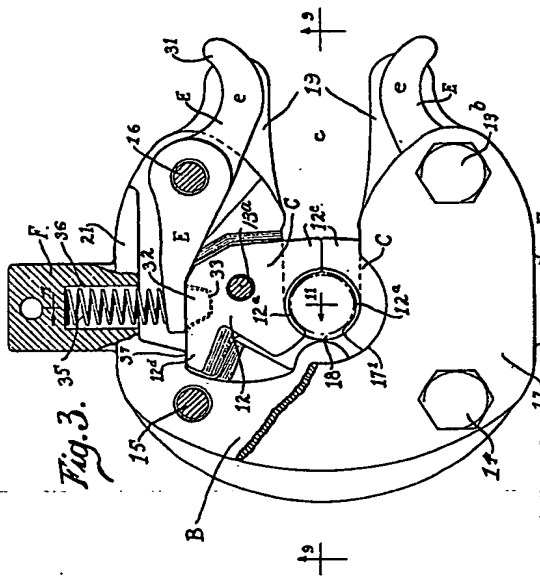
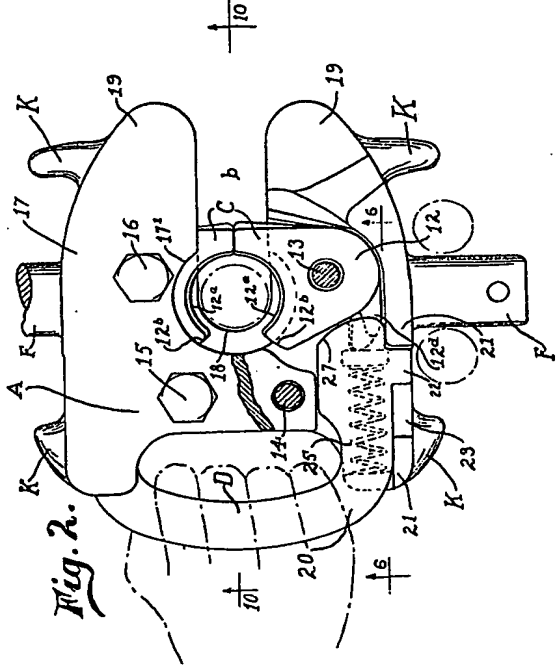
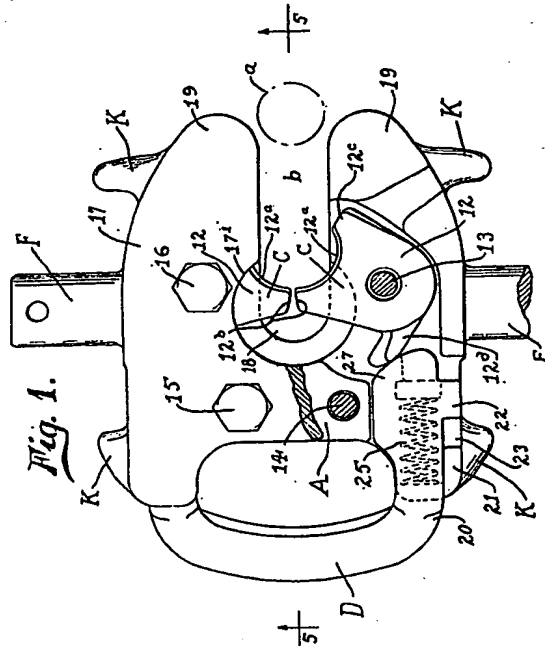


Fig. 5.

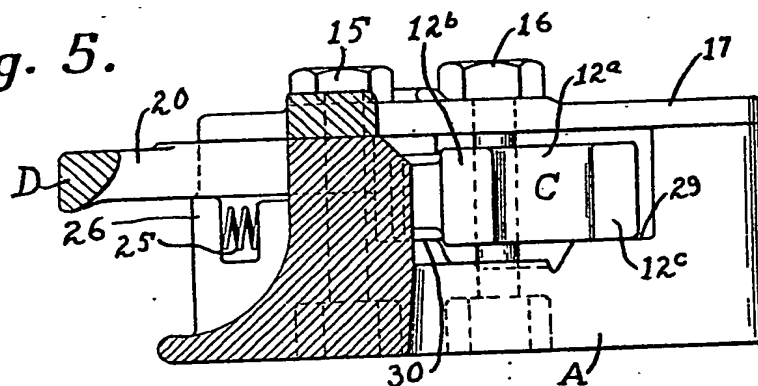


Fig. 7.

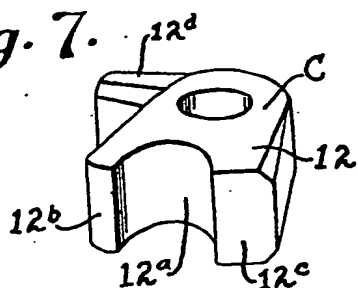


Fig. 6.

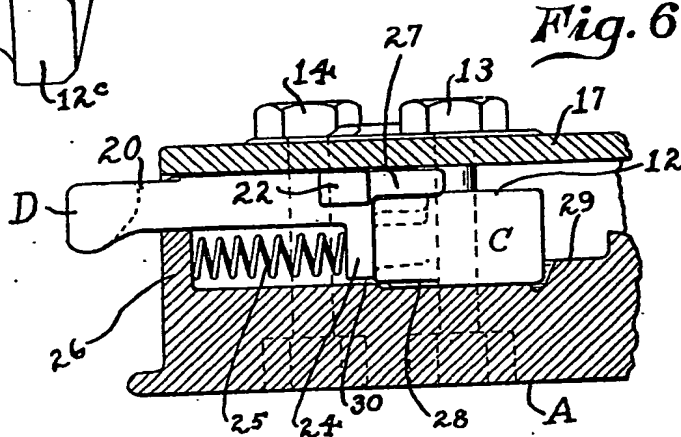
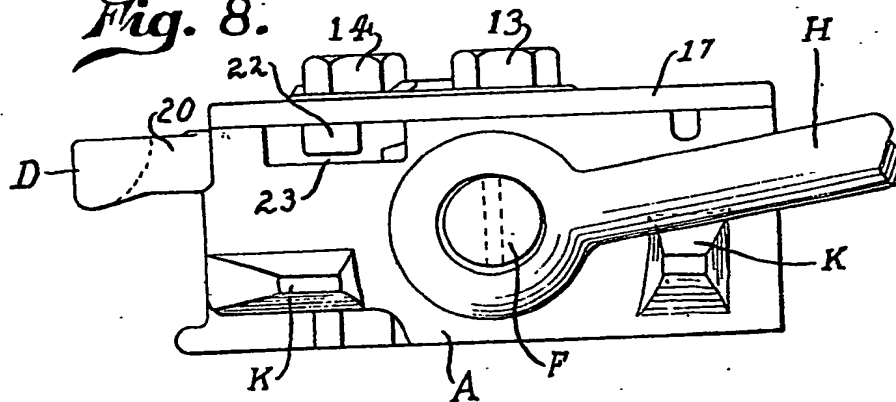
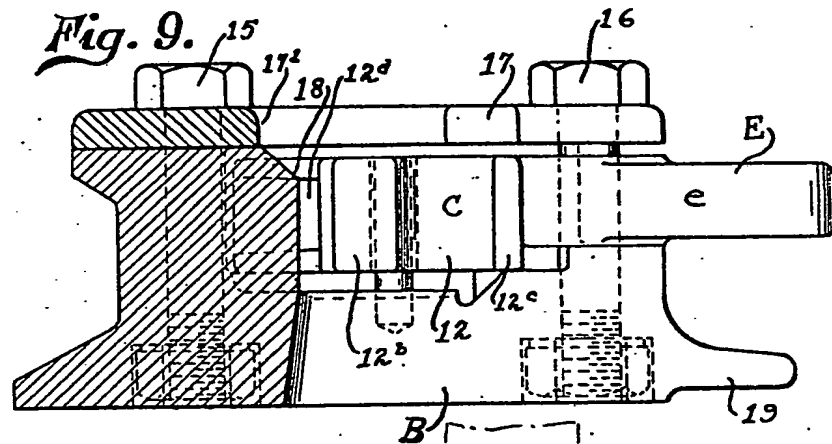
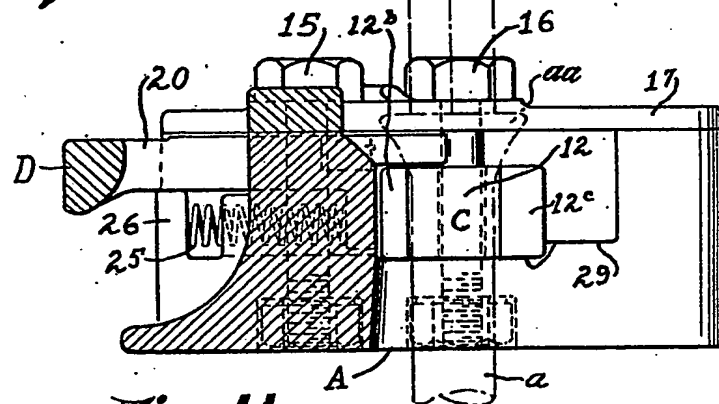
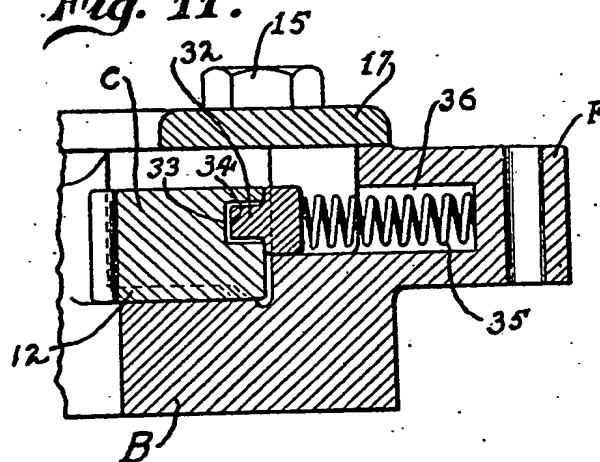


Fig. 8.



[This Drawing is a reproduction of the Original on a reduced scale.]

*Fig. 10.**Fig. 11.*

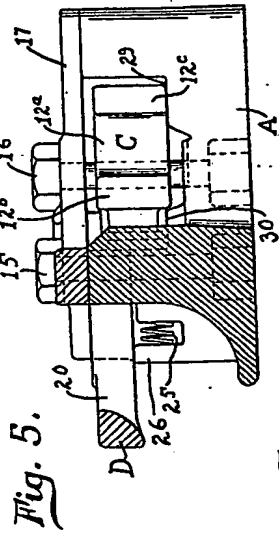


Fig. 5.

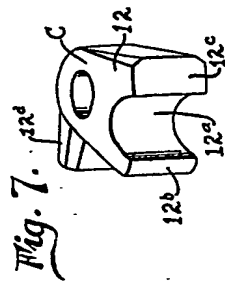


Fig. 7. 12d

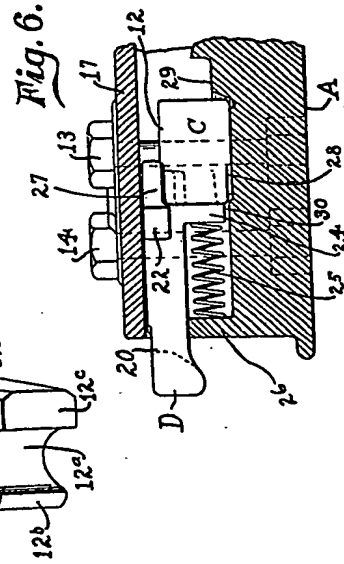


Fig. 6.

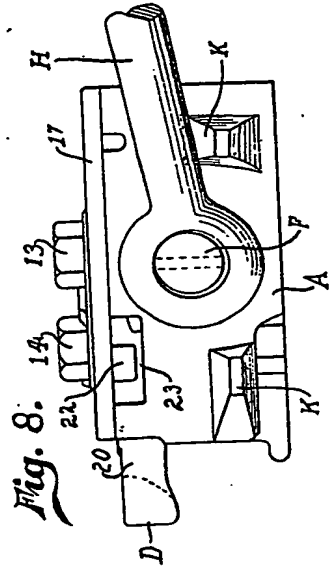


Fig.

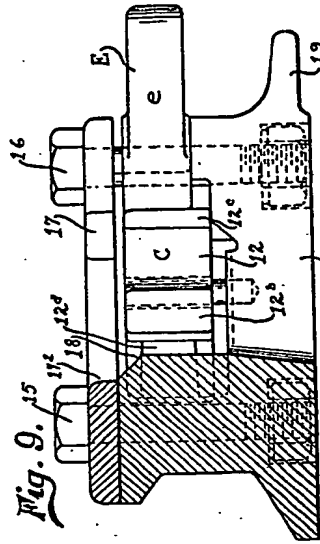


Fig. 9. ¹⁵

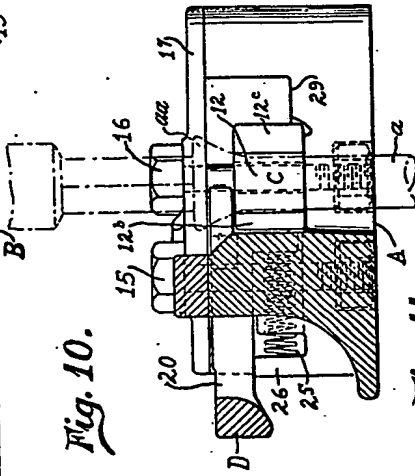


Fig. 10.

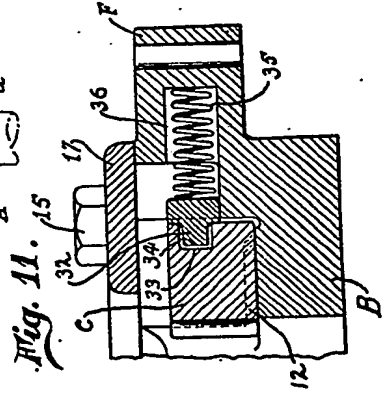


Fig. 11.

[This Drawing is a reproduction of the Original on a reduced scale]

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.

This Page Blank (uspto)